

**REMARKS**

Reconsideration of this application is requested. Claims 1-7, 10-21 and 47-65 are in the case.

**I. ELECTION/RESTRICTION**

The election of Group I (claims 1-21) is hereby affirmed. Claims 22-46 have been canceled without prejudice to the possibility of pursuing one or more divisional applications directed to that subject matter.

**II. DRAWINGS**

The drawings have been objected to in view of features recited in previous claims 8, 9 and 19. In response, claims 8 and 9 have been canceled without prejudice, and claim 19 has been amended to remove reference to a "safety purge".

**III. SPECIFICATION**

The specification has been amended to correct the points raised by the Examiner. In addition, customary headings have been inserted including a brief description of the drawings. No new matter is entered.

**IV. CLAIM OBJECTIONS**

Claims 1 and 2 have been objected to for the reasons stated in paragraph 5. Those claims have been amended to deal with the outstanding points.

**V. THE 35 U.S.C. § 112, SECOND PARAGRAPH, REJECTION**

Claims 1-21 stand rejected under 35 U.S.C. § 112, second paragraph, as allegedly indefinite for the reasons detailed on pages 4-6. The claims have been amended to deal with these points. The following comments are offered.

Claim 1 has been objected to as not containing the language "comprising". In response, claim 1 has been amended to include "comprising".

The Examiner has objected that many of the claims do not have proper antecedent basis for terms in the claims. In response, the claims have been amended to provide such antecedent basis.

The claims have been rejected as allegedly unclear in regard to the structural relationship between recited elements. It is believed that the claims as amended are clear in this respect, particularly in light of the amendments to claim 1.

Withdrawal of the outstanding formal rejection is now believed to be in order. Such action is respectfully requested.

**VI. THE ANTICIPATION REJECTION**

Claims 1-6 and 10 stand rejected under 35 U.S.C. § 102(b) as allegedly anticipated by U.S. Patent 5,451,247 to Gross et al. That rejection is respectfully traversed.

The present invention relates to a reactor in which the inlet molecular oxygen-containing gas pipe is surrounded over a substantial portion by an inert fluid. This inert fluid is essentially sealed from the reactor, in that, in the absence of leaks, breakages or

other failures the inert fluid does not enter the reactor. This feature has been clarified by the amendments to claim 1.

Gross relates to a process and apparatus for removing tin, arsenic and antimony from molten lead by means of oxygen or oxygen-containing gas mixtures, which is or are blown into the molten lead by means of at least one gas nozzle. To avoid damage to the gas nozzle, at least the oxygen outlet region is enveloped by an inert gas (see abstract). This is achieved by blowing the inert gas into the molten lead around the oxygen outlet. This forms a "gas cushion" which prevents contact of the molten lead being oxidized and the outlet of the oxygen pipe (column 2, lines 53-61). The inert fluid surrounding the inlet pipe is therefore **not** sealed, but actually flows directly into the reactor with the oxygen gas (column 2, lines 53-57).

In light of the above, it is clear that the presently claimed invention is not anticipated by Gross. Withdrawal of the outstanding anticipation rejection based on that reference is accordingly respectfully requested.

Claims 1-5 and 10 stand rejected under 35 U.S.C. § 102(b) as allegedly anticipated by U.S. Patent 4,554,078 to Huggins et al. That rejection is respectfully traversed.

Huggins relates to methods and apparatus for effluent disposal. In particular, Huggins discloses an effluent tube wherein a liquid effluent is passed along the tube using a non-reactive gas. The effluent exits the tube and is enveloped in the non-reactive gas and, hence, is shielded from a treating material, with which the effluent is to be treated.

Huggins discloses a "buffer zone" to prevent contact of certain materials with the tube outlet (see, for example, column 2, lines 34-47 and column 5, lines 45-52). Thus, the inert fluid surrounding the inlet pipe in Huggins is **not sealed**, but actually flows directly into the reactor.

In light of the above, it is clear that Huggins et al. does not anticipate the presently claimed invention. Reconsideration and withdrawal of the outstanding anticipation rejection based on that reference are accordingly respectfully requested.

Claims 1-5, 17 and 20 stand rejected under 35 U.S.C. § 102(b) as allegedly anticipated by U.S. Patent 5,866,095 to McGeever et al. That rejection is respectfully traversed.

McGeever relates to a method and system for converting a feed to a dissolved atomic constituent for subsequent oxidation of the dissolved atomic constituent. In particular, McGeever discloses a reactor with an oxidant inlet tube to allow the oxidant to be introduced into a molten bath (column 7, lines 9-12). The oxidant may be oxygen (column 7, lines 16-17). The oxidant may be introduced in the presence of an (inert) shroud gas (for example, Figure 1).

McGeever et al. discloses that a shroud gas may prevent wear of the tube outlet (column 2, lines 28-33). The shroud gas surrounding the inlet pipe in McGeever et al. is therefore **not sealed**, but actually flows directly into the reactor.

McGeever clearly does not anticipate the presently claimed invention. Withdrawal of the anticipation rejection based on McGeever is respectfully requested.

None of the above discussed references describes the inert fluid surrounding the inlet pipe being provided with a limited supply of inert fluid sufficient to replace minor

leaks. In light of this, it is also clear that new claim 47 and claims dependent thereon are novel over the above-cited references.

## **VII. THE OBVIOUSNESS REJECTIONS**

Claims 1, 10, 11 and 21 stand rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over U.S. Patent 5,801,265 to Wagner et al. in view of Huggins et al. That rejection is respectfully traversed.

Claim 1 has been amended to specify that the inert fluid surrounding the inlet pipe is sealed. This feature is not disclosed or suggested by Wagner et al. either taken alone or in view of Huggins et al. Moreover, there is no suggestion in Wagner and Huggins of the concept of requiring that the inert fluid surrounding the inlet pipe is provided with a limited supply of inert fluid sufficient to replace minor leaks. In light of this, it is clear that new claim 47 and claims dependent thereon are not suggested by this combination of references.

Claims 8 and 9 have been canceled without prejudice. The obviousness rejection of claims 8 and 9 has therefore been rendered moot.

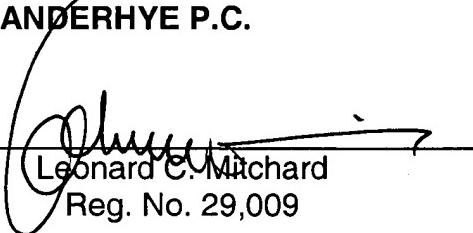
The remaining obviousness rejections are directed to claims which are dependent either directly or indirectly on claim 1 and thereby incorporate the features of amended claim 1. The dependent claims are thus clearly patentably distinguished over the cited art for the same reasons that claim 1 is patentably distinguished. Reconsideration and withdrawal of all of the outstanding obviousness rejections are accordingly respectfully requested.

Allowance of the application is awaited.

Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached pages are captioned "V rsion With Markings To Show Changes Made."

Respectfully submitted,

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**VERSION WITH MARKINGS TO SHOW CHANGES MADE  
IN THE SPECIFICATION**

The paragraph beginning at page 1, after line 5 insert:

**BACKGROUND OF THE INVENTION**

The paragraph beginning at page 2, after line 26 insert:

**SUMMARY OF THE INVENTION**

The paragraph beginning at page 7, please replace the paragraph at lines 15-18 with the following:

**BRIEF DESCRIPTION OF THE DRAWINGS**

The invention will now be illustrated by way of example only and with reference to the drawings in which Figure 1 represents in schematic form, a cross-section of a fluid bed reactor according to the present invention and [Figure 2 represents] Figures 2a, 2b and 2c represent in schematic form, a cross-section of three designs of inlet pipe according to the present invention.

**BRIEF DESCRIPTION OF PREFERRED EMBODIMENTS**

Page 8, please replace the paragraph beginning at line 6 with the following amended paragraph:

[Figure 2 shows] Figures 2a, 2b and 2c show in schematic cross-section three designs of inlet pipe according to the present invention and such as are shown in Figure 1. A substantial portion of each inlet pipe (10) within the reactor (1) is surrounded by an

outer pipe (3) which is connected to a supply of inert gas (14) such as nitrogen. Each inlet pipe (10) is provided with an orifice plate or restriction (20) to limit the supply of molecular oxygen-containing gas and an orifice plate (21) near its outlet to reduce or prevent ingress of flame, reagents, products and fluid bed catalyst. Suitably the orifice plate has more than one orifice, for example 3 orifices in a triangular pitch and provides sufficient back-pressure to suppress ingress of flame, reagents, products and fluid bed catalyst but with an exit linear velocity of gas which would not lead to excessive attrition of the fluid bed catalyst. In one design (Figure 2a), the inlet pipe (10) extends concentrically from the outer pipe (3) by only a short distance. In the second design (Figure 2b) the inlet pipe (10) extends radially from the outer pipe (3) by only a short distance. More than one inlet pipe may be surrounded by a common outer pipe as is shown in Figure 2c.

#### **IN THE CLAIMS**

Claims 8-9 and 22-46 have been canceled without prejudice.

1. (Amended) A reactor for containing a solid catalyst for a heterogeneous gas-phase reaction [into which reactor there extends] comprising at least one inlet pipe for a molecular oxygen-containing gas, [in which,] said inlet pipe [has] having an outlet and surround means for surrounding a substantial portion of said inlet pipe in said reactor with an inert fluid, wherein the inert fluid surrounding the inlet pipe is sealed.

2. (Amended) A reactor as claimed in claim 1 in which at least 85% of [the] said pipe in said reactor is surrounded by said surround means.

5. (Amended) A reactor as claimed in claim 1 in which said surround means for surrounding a substantial portion of said inlet pipe in said reactor with inert fluid comprises an outer pipe surrounding a substantial portion of [one or more inlet pipes] at least one inlet pipe for molecular oxygen containing gas in said reactor and provided with a supply of insert fluid.

16. (Amended) A reactor as claimed in claim 12 in which said restriction is located within [the] a region of said inlet pipe surrounded by said means for surrounding said inlet pipe with inert fluid.

17. (Amended) A reactor as claimed in claim 1 [having more than one inlet pipe] wherein said at least one inlet pipe comprises a plurality of inlet pipes.

18. (Amended) A reactor as claimed in claim 17 in which the [distance between] inlets are separated by a distance which is [significantly] in excess of [the] potential flame length.

19. (Amended) A reactor as claimed in claim 17 in which [said] a molecular oxygen-containing gas for said inlet pipes is provided from a common end box having [a low] an inventory [and optionally provided with a safety purge during shut down].

20. (Amended) A reactor as claimed in claim 1 in which said inlet pipe is [adapted to be] operably connected to a supply of molecular oxygen-containing gas provided through [one or more] at least one flow restriction means which restrict [the] flow of molecular oxygen-containing gas to the inlet pipe.

New claims 47-65 are added.